

REMARKS

With regard to the Information Disclosure Statement (IDS) filed August 19, 2003, Applicants have provided a copy IDS as filed and a copy of the postcard indicating the proper receipt of the IDS. A complete page 3 is included. Acknowledgement of the references cited therein is respectfully requested.

Allowable Subject Matter

Claims 3-8, 11, 12, 15-19, 22, 25, 29, 30, 35-37, 45-48, 50, 53-55, 59, 61, 65, 77, 82, 85 and 89 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Applicants appreciate the Examiner's noting the allowable subject matter.

Claims 23, 24, 26, 27, 32-34, 51, 52, 56, 60, 62-64, 66, 72-74, 76, 79, 80, 83, 84, 86-88 and 90 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims. Applicants appreciate the Examiner's noting the allowable subject matter.

Specification

The specification has been objected to based on informalities. The Examiner states:

“on page 1 of the specification that serial number 10/349601 is now abandoned should be inserted in line 4 and on page 13, line 22 “334” should be -324-.”

“Appropriate correction is required.”

Applicants appreciate the Examiner's observations and have amended the specification accordingly.

Drawings

The drawings have been objected to under 37 CFR 1.83(a). The Examiner states:

“The drawings must show every feature of the invention specified in the claims. Therefore, the watercraft mode selector of claims 42 and 49 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.”

Applicants appreciate the Examiner’s observations and have amended the drawings accordingly. Replacement sheets have been provided.

Claim Disposition

Claims 1 – 92 are pending in the application. Claims 1, 2, 9, 10, 13, 14, 20, 21, 23, 24, 26 – 28, 31 – 34, 38 – 44, 49, 51, 52, 56 – 58, 60, 62 – 64, 66 – 76, 78 – 81, 83, 84, 86 – 88, and 90 – 92 have been rejected. Claims 3 – 8, 11, 12, 15 – 19, 22, 25, 29, 30, 35 – 37, 45 – 48, 50, 53 – 55, 59, 61, 65, 77, 82, 85, and 89 have been objected to.

Claim Objections

With respect to Detailed Action Items 4 - 6:

Claims 1 and 40, 41, 59, 61, and 65 stand objected to because of informalities. The Examiner states:

“Claims 1 and 40 are objected to because of the following informalities: in claim 1, line 6 the semi-colon after “of” should be deleted; in claim 40, line 9, a semi-colon should be inserted after “signal”; and the semi-colon at the end of line 40 should be a period. Appropriate correction is required.”

“Claim 41 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. All of the subject matter in claim 41 can be found in parent claim 1.”

“Claims 59, 61 and 65 are objected to under 37 CFR 1.75 as being a substantial duplicate of claims 15, 17 and 18 respectively. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).”

Applicants appreciate the Examiner’s observations and have amended Claims 1 - 40, accordingly to address the Examiner’s concerns. Claims 40 – 66 and 68 – 90 have been

amended to correct their dependency. Thus the objections to claims 41, 59, 61, and 65 are addressed based on these amendments.

Claim Rejections -35 USC § 112

Claims 42, 49, 69 and 75 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. Applicants respectfully traverse. The Examiner states:

“The claim(s) contains subject matter which was not described, in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Applicant has failed to describe in detail in such a way as to reasonably convey to one skill in the relevant art that the inventors, at the time the application was filed, had possession of the watercraft steer by wire control system including a watercraft mode selector for producing a mode selection signal and wherein said position control process is responsive to said mode selection signal; the watercraft steer-by-wire control system wherein said variable steering ratio is response to at least one of the helm position signal, a helm torque signal, a watercraft speed signal, and *a watercraft mode selector for producing a mode selection signal*; and the method for steering a watercraft comprising calculating and producing a variable steering ratio signal in response to at least one of a helm position signal, a helm torque signal, *a watercraft speed signal, and a watercraft mode selector for producing a mode selection signal 1.*”

Applicants respectfully disagree with the Examiner’s assertion that the watercraft mode selector for producing a mode selection signal not described, in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The Examiner’s attention is respectfully directed to Page 10 line 10 through page 13 line 14. In particular, page 13 lines 8 through 14.

Claims 23, 24, 26, 31, 32, 34, 38, 39, 43, 44, 49, 51, 52, 56, 60, 62, 63, 64, 66, 68, 71, 72, 73, 74, 76, 78, 79, 80, 81, 83, 84, 86-88, and 90-92 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicants respectfully traverse. The Examiner states:

“In claim 23 “said damping torques command signal” has no clear antecedent.”

"In claim 24 "said compensated torque command signal" has no clear antecedent. In claim 26 "said variable steering ratio signal" has no clear antecedent."

"In claim 31 "a direction control system" is a double inclusion of "a direction control system" of parent claim 20."

"In claim 32 "said position command signal" has no clear antecedent."

"In claim 34 "said rudder control unit" and "said position command signal" have no clear antecedents."

"In claim 38 "The storage medium" has no clear antecedent."

"In claim 39 "The computer data signal" has no clear antecedent."

"In claim 43 "said rudder control system" has no clear antecedent and "a torque control process" is a double inclusion having already been claimed in claim 1."

"In claim 44 "a torque sensor" and "a torque control process" are double inclusions from parent claim 1 and "said helm command signal" has no clear antecedent."

"In claim 49 "said variable steering ratio" has no clear antecedent."

"In claim 51, "said theta corrected directional command signal" has no clear antecedent and "a helm torque signal" is a double inclusion."

"In claim 52 "said tactile feedback" has no clear antecedent."

"In claim 56 "said torque command signal" has no clear antecedent."

"In claim 60 "said rudder control unit" and "said position command signal" have no clear antecedents."

"Claims 62-64 are unclear because each is an apparatus claim depending from a method claim."

"In claim 63 "said lateral thruster" has no clear antecedent."

"Claim 66 is an apparatus claim depending from method claim 26 and is, therefore, unclear."

"In claim 66 "said trim tab" has no clear antecedent."

"Claim 68 includes the step of "receiving a watercraft speed signal" for a second time. This step is already claimed in parent claim 20."

"Claim 71 includes the step of "receiving a helm torque signal" for a second time. This step is already in parent claim 20."

"In claim 72 "said helm command signal" has no clear antecedent."

“In claim 73 “said damping torque command signal” has no clear antecedent.”

“In claim 74 “said helm command signal” and “said compensated torque command signal” have no clear antecedents.”

“In claim 76 “said variable steering ratio signal” has no clear antecedent.”

“In claim 78 “a helm control system” is a double inclusion as parent claim 20 already claims “a helm control system”.”

“Claims 80, 83, 84, 86, 87, 88 and 90 are method claims depending from an apparatus claim and are, therefor, unclear.”

“In claim 80 “said torque command signal” has no clear antecedent.”

“In claim 81 “a direction control system” is a double inclusion as parent claim 20 already defines “a direction control system.”

“In claims 83 and 84 “said rudder control unit” and “said position command signal” have no clear antecedents.”

“In claim 86 “said at least one of said port command and said starboard command” has no clear antecedent.”

“In claim 90 “said trim tab” has no clear antecedent.”

“In claim 91 “The storage medium encoded with a machine readable computer program code” has no clear antecedent.”

“In claim 92 “The computer data signal for steering a watercraft” has no clear antecedent.”

Applicants respectfully submit that in light of the amendments to claims the above rejections are moot. Applicants respectfully request further clarification with regard to the rejections of Claims 38, 39, 91, and 92 for lack of antecedent as these are independent claims.

Claim Rejections 35 U.S.C. §102

With respect to Detailed Action Item 1:

Claims 40, 67, 91, and 92 stand rejected under 35 U.S.C. §102(b) as allegedly being anticipated by Dimmick et al., U.S. Patent No. 4,129,087 hereinafter referred to as Dimmick. Applicants respectfully traverse. The Examiner states that:

“Claims 40, 67, 91 and 92 are rejected under 35 U.S.C. 102(b) as being anticipated by Dimmick et al when in the third mode. Note helm wheel 19, digital computer 15 and rudder and helm angle indicator 55.”

Applicants respectfully contend that the explanation in the Office Action mischaracterizes the teachings of Dimmick. To anticipate a claim under 35 U.S.C. §102, a single source must contain all of the elements of the claim. Lewmar Marine Inc. v. Barient, Inc., 827 F.2d 744, 747, 3 U.S.P.Q.2d 1766, 1768 (Fed. Cir. 1987), cert. denied, 484 U.S. 1007 (1988). Moreover, the single source must disclose all of the claimed elements **“arranged as in the claim.”**(emphasis added) Structural Rubber Prods. Co. v. Park Rubber Co., 749 F.2d 707, 716, 223 U.S.P.Q. 1264, 1271 (Fed. Cir. 1984). Moreover, “[t]he **identical invention must be shown in as complete detail as is contained in the ...claim.**”(emphasis added) Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). Missing elements may not be supplied by the knowledge of one skilled in the art or the disclosure of another reference. Titanium Metals Corp. v. Banner, 778 F.2d 775, 780, 227 U.S.P.Q. 773, 777 (Fed. Cir. 1985).

With regard to Claims 40, 67, 91 and 92 specifically, Applicants respectfully contend that Dimmick does not teach or disclose each element of the invention “arranged as in the claim”. Specifically, Dimmick does not teach or disclose, “a helm control system responsive to a helm command signal for receiving a directional input to a helm from an operator **and providing tactile feedback to an operator**”. Dimmick includes no teaching with respect to providing tactile feedback to the operator. Furthermore, it is unclear from the teachings of Dimmick whether the system disclosed therein is a steer-by-wire control system. Therefore, because Dimmick does not disclose or teach an element of the invention it cannot anticipate the Applicants’ claims. Thus, Claims 40, 67, 91 and 92 are allowable, the rejections are improper, and they should be withdrawn.

In view of the above discussion, Claims 41 – 66 and 68 - 90 depend from Claims 40 and 67 respectively, whether directly or indirectly, and include all of the corresponding limitations thereof. Claims 40 and 67 are not taught by Dimmick, therefore, Claims 41 – 66 and 68 - 90, cannot be taught by Dimmick either. Thus, Claims 41 – 66 and 68 - 90 are allowable, the rejections are improper and they should be withdrawn.

Claim 67 is rejected under 35 U.S.C. 102(b) as being clearly anticipated by Cognevich, Sr. et al., U.S. Patent No. 4,595,867, hereinafter referred to as Cognevich, Sr. Applicants respectfully traverse.

With regard to Claim 67, Applicants respectfully contend that Cognevich, Sr. does not teach or disclose each element of the invention “arranged as in the claim”. Specifically, Cognevich, Sr. does not teach or disclose, “a helm control system responsive to a helm command signal for receiving a directional input to a helm from an operator **and providing tactile feedback to an operator**”. Cognevich, Sr. includes no teaching with respect to providing tactile feedback to the operator. Furthermore, it is unclear from the teachings of Cognevich, Sr. whether the system disclosed therein is a steer-by-wire control system. Therefore, because Cognevich, Sr. does not disclose or teach an element of the invention it cannot anticipate the Applicants’ claims. Thus, Claim 67 is allowable, the rejection is improper, and it should be withdrawn.

Claims 1, 2, 9, 10, 13, 14, 20, 21, 28, 31, 38-44, 57, 58, 67, 68, 70, 71, 78, 81, 91 and 92 are rejected under 35 U.S.C. 102(e) as being anticipated by Andonian et al., U.S. Patent No. 6,655,490, hereinafter referred to as Andonian. Applicants respectfully traverse. The Examiner states:

“First of all note column 2, lines 9-13.”

“In view of the above lines, Andonian et al discloses a watercraft steer-by-wire control system comprising:”

“a direction control system 14 responsive to a directional command signal 16 for steering a watercraft, said direction control system including a rudder position sensor (see column 2, line 64) to measure and transmit a rudder position signal;”

“a helm control system 12 responsive to a helm command signal for receiving a directional input to a helm from an operator 34 and providing tactile feedback 35 to an operator, said helm control system including at least one of a helm position sensor to produce and transmit a helm position signal and a torque sensor to produce and transmit a helm torque signal (see column 2, lines 16-18); a watercraft speed sensor (see column 3, line 44) for producing a watercraft speed signal;”

“a master control unit 16 in operable communication with said watercraft speed sensor, said helm control system, and said direction control system;”

“said master control unit includes a position control process for generating said directional command signal in response to said watercraft speed signal, said helm torque signal and said helm position signal; and said master control unit includes a torque control process for generating said helm command signal based on said helm torque signal, said helm position signal and said watercraft speed signal (see column 4, lines 5-10). In view of column

2, lines 10-13, Andonian also discloses a method for directing a watercraft with a watercraft steer-by-wire system comprising:

“receiving a watercraft speed signal (see column 3, line 44); “

“receiving a helm position signal (see column 2, lines 17 and 18);”

“receiving a helm torque sensor signal (see column 2, lines 17 and 18);”

“receiving a rudder position signal (see column 2, lines 60-65);”

“generating a helm command signal 35 to a helm control system based on said helm torque signal, said helm position signal, and said watercraft speed signal to provide tactile feedback to an operator; and”

“generating a directional command signal 36 to a direction control system based on said watercraft speed signal, said rudder position signal, and said helm position signal to control direction of said watercraft.”

“With regard to claims 2 and 43, see column 3, line 2.

“The closed loop control system of claim 9 is shown in figure 2.”

“What is defined in claim 10 and the other claims with the same or similar limitations is an inherent feature of the system of Andonian et al that is needed in order for it to be operative.”

“With regard to claim 14, see figure 2.”

With regard to Claims 1, 2, 9, 10, 13, 14, 20, 21, 28, 31, 38-44, 57, 58, 67, 68, 70, 71, 78, 81, 91 and 92 and more specifically, claims 9, 10, 14, 57, and 58, Applicants respectfully contend that Andonian does not teach or disclose each element of the invention “arranged as in the claim”. Specifically, Andonian does not teach or disclose, “said helm control system comprises a closed loop control system responsive to said helm command signal and said helm torque signal.” In particular, the disclosure of Andonian does not specifically state that the control system is a closed loop system. The reference to the figures make the inference. Second, it is noteworthy to appreciate that the helm command signal 36 is generated in the master control unit 16 and sent to the helm control system 12. This is not taught in the cited reference. Thus, the signal that is claimed as the helm command signal is not equivalent to the signal depicted in Figure 2 of Andonian. Furthermore, the Office Action is silent as to which signal of Figure 2 of Andonian the Examiner considers to be the equivalent of the helm command signal 36 as claimed.

Furthermore, Andonian does not teach or disclose, “said helm control system configured to exhibit a bandwidth sufficient to facilitate said torque control process

maintaining stability of said watercraft steer-by-wire system.” The Examiner suggests that the claimed features are inherent and are needed in order for it to be operative. (see Office action Page 10). Applicants respectfully disagree.

“To establish inherency, the extrinsic evidence ‘must make clear that the missing descriptive matter is **necessarily present** (emphasis added) in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.’ ” *In re Robertson*, 169 F. 3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999). In order to support an anticipation rejection based on inherency, an Examiner must provide factual and technical grounds establishing that **the inherent feature necessarily flows from the teachings of the prior art.** (Emphasis added) *Ex parte Levy*, 17 U.S.P.Q.2d 1461, 1464 (Bd. Pat. App. & Int. 1990); *In re Oelrich*, 666 F.2d 578, 581, 212 U.S.P.Q. 323, 326 (C.C.P.A. 1981) (holding that inherency must flow as a necessary conclusion from the prior art, not simply a possible one). The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. *In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed.Cir. 1993).

Applicants submit that the Examiner has not made a prima facie case of anticipation of the claims based on inherency. The Examiner has not shown that the claimed features are necessarily present in the teachings of Andonian. In fact, the claimed language is based on the fact that the control structure of Applicants invention and Andonian are different. Applicants recognized the benefits of employing a control system with a minimum threshold bandwidth would permit the torque control process maintaining stability of the outer loop of the control system. Use of a higher bandwidth system would of course, require additional expense and complexity. Furthermore, there is a practical limit on the bandwidth of certain components based on their physical characteristics. Thus, it is not necessarily present in the teachings of Andonian that “said helm control system configured to exhibit a bandwidth sufficient to facilitate said torque control process maintaining stability of said watercraft steer-by-wire system” and therefore it cannot be inherent. Therefore, because the Examiner has not made a prima facie case of anticipation based on inherency and Andonian does not disclose or teach an element of the invention it cannot anticipate the Applicants’ claims. Thus, Claims 9, 10, 14 and 57, 58 are allowable, the rejections are improper, and they should be withdrawn. Applicants respectfully note that there are no specific rejections for the

remainder of the claims, thus the arguments presented above regarding inherency are equally applicable.

The arguments and amendments presented herein are made for the purposes of better defining the invention, rather than to overcome the rejections for patentability. The claims have not been amended to overcome the prior art and therefore, no presumption should attach that either the claims have been narrowed over those earlier presented, or that subject matter or equivalents thereof to which the Applicant is entitled has been surrendered. Allowance of the claims is respectfully requested in view of the above remarks. Moreover, no amendments as presented alter the scope of the claimed invention and therefore cannot necessitate a new grounds rejection.

It is believed that the foregoing remarks are fully responsive to the Office Action and that the claims herein should be allowable to the Applicant. In the event the Examiner has any queries regarding the instantly submitted response, the undersigned respectfully requests the courtesy of a telephone conference to discuss any matters in need of attention.

If there are additional charges with respect to this matter or otherwise, please charge them to Deposit Account No. 06-1130.

Respectfully Submitted,

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